

**DIGITALLY MODELING THE DEFORMATION OF GINGIVAL  
TISSUE DURING ORTHODONTIC TREATMENT****CROSS-REFERENCES TO RELATED APPLICATIONS**

5 [0001] This application is a continuation of U.S. Patent Application No. 10/280,556,  
*now U.S. Patent No. 6,685,470,*  
(Attorney Docket No. 18563-005810-AT-00112.1), filed October 24, 2002, which was a  
continuation of U.S. Patent Application No. 09/311,716 (Attorney Docket No. 18563-005800  
*now U.S. Patent No. 6,514,074*  
/ AT-00112), filed May 14, 1999, the full disclosures of which are incorporated herein by  
reference.

10 [0002] This application is related to U.S. patent application 09/264,547, filed on *Pending*  
March 8, 1999, and entitled "Segmenting a Digital Dentition Model," which is a  
continuation-in-part of U.S. patent application 09/169,276, filed on October 8, 1998, and  
entitled "Computer Automated Development of an Orthodontic Treatment Plan and  
*now abandoned,*  
Appliance," which claims priority from PCT application PCT/US98/12681, filed on June 19,  
15 1998, and entitled "Method and System for Incrementally Moving Teeth," which claims  
priority from U.S. patent application 08/947,080, filed on October 8, 1997, *now U.S. Patent No. 5,975,893*  
which claims  
priority from U.S. provisional application 60/050,342, filed on June 20, 1997, all of which are  
incorporated by reference into this application.

20 [0003] This application also is related to U.S. patent application 09/311941, filed on  
*now U.S. Patent No. 6,409,504*  
May 14, 1999, and entitled "Manipulating a Digital Dentition Model to Form Models of  
Individual Dentition Components" (attorney docket number 09943/009001); U.S. patent  
application 09/169,036, *U.S. Patent No. 6,450,807*  
entitled "System and Method for Positioning Teeth"; and U.S. patent  
application 09/169,034, *now U.S. Patent No. 6,471,511*  
entitled "Defining Tooth-moving Appliances Computationally," all  
of which are incorporated by reference.

**BACKGROUND OF THE INVENTION**

25 [0004] The invention relates generally to the fields of dentistry and orthodontics.  
Two-dimensional (2D) and three-dimensional (3D) digital image technology has recently  
been tapped as a tool to assist in dental and orthodontic treatment. Many treatment providers  
use some form of digital image technology to study the dentitions of patients. U.S. patent  
30 application 09/169,276, incorporated by reference above, describes the use of 2D and 3D  
image data in forming a digital model of a patient's dentition, including models of individual